

EL USO DE LA EVALUACIÓN PARTICIPATIVA RURAL PARA PROMOVER LA INNOVACIÓN SOCIAL EN PRODUCTORES AGRÍCOLAS A PEQUEÑA ESCALA

THE USE OF PARTICIPATORY RURAL APPRAISAL TO SUPPORT SOCIAL INNOVATION IN SMALL-SCALE AGRICULTURAL PRODUCERS

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RESUMEN:

El presente estudio busca analizar el uso de herramientas de Evaluación Rural Participativa (PRA por sus siglas en inglés) en comunidades rurales para ayudar a productores agrícolas a generar innovación social. Usamos enfoque PRA para desarrollar un taller con 22 productores y realizar tres mesas de trabajo enfocadas en áreas productivas, sociales y económicas. En tres rondas, ellos discutieron los principales problemas y necesidades en la innovación. Así, los productores generaron soluciones potenciales a estos problemas y un plan de acción de acuerdo con las herramientas PRA utilizadas. Los resultados muestran que las herramientas PRA son efectivas para la generación de conocimientos y apoya el proceso de toma de decisiones con información sobre las actividades a corto y largo plazo que necesitan incluir en su estrategia actual. Finalmente, las estrategias PRA alientan a los

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productores a trabajar de una forma más organizada para obtener mejores resultados en el proceso de innovación social que trabajan actualmente.

PALABRAS CLAVE: Evaluación Rural Participativa, innovación, agricultura, estrategias.

ABSTRACT:

This study aims to analyze the use of Participatory Rural Appraisal (PRA) tools in rural communities to support agricultural producers in generating social innovation. We use the PRA approach to develop a workshop with 22 producers, and making three discussion tables focused on productive, social and economic areas. Into three rounds, they discuss problems and needs in innovation. Then, producers generate potential solutions and an action plan according to the PRA tools given. The results show that PRA tools are accurate for the generation of knowledge and support the decision-making process with information regarding short- and long-terms activities they need to pursue into their current strategy. Finally, PRA strategies encourage producers to work in a organize manner to obtain better results in the social innovation process they are working on.

KEYWORDS: Participatory Rural Appraisal, innovation, agriculture, strategies.

INTRODUCTION

Statistics show that 37% of Ecuadorian population live in territories that are predominantly rural where agriculture is the main income generation activity (Subsecretaría de Hábitat y Asentamientos Humanos - SHAH, 2015).

The rural family economy represents between 60% and 80% of Agricultural Production Units (Unidades de Producción Agrícola - UPAs for its Spanish translation) (Carrión & Herrera, 2012). According to Oyarzun, Borja, Sherwood, & Parra (2013) the relevance of small-scale agriculture as a source of employment, provider of strategic products for the country, and means of conservation of agrobiodiversity. However, not all the opportunities for agricultural producers promote the favorable regulatory framework that, in agricultural matters, the country has, to take advantage and support them in their productive process. (Pino, 2017)

A lack of participation and representation in important decisions about local resources are among the main problems experienced by the inhabitants of rural areas (Prager *et al.*, 2005). In this context, the Participatory Rural Appraisal (PRA) framework in this study,

aimed to empower agricultural innovation. According to Solano *et al* (2018) this approach support people both knowledgeable about the local biophysical and social environment and, its associated problems and aware of how to solve such problems, helping them to actively work toward their resolution while engaged in an interdisciplinary learning process.

For this reason, the question that guides our study is: Can PRA strategies support the improvement of social innovation activities in rural producers? The main objective of this study is to apply PRA using bottom-up strategies to analyze the socioeconomic factors that stop social innovation in small-scale producers. Then, workshops and interviews are made to know more about local problems and define potential solutions to them. In the end, the authors aim to demonstrate that the combined knowledge of experts and extensionist along with the community are better paths to generate public policies. We also seek to understand the effects that agricultural and rural extension could have to solve the need and problems faced by producers and support their productive and innovation activities, towards Family Farming.

This study is divided into four different sections: 1) general information about the study framed in the introduction and literature review, 2) methods for design and analysis of data, used to work with the main actors, agents, and stakeholders in the sector, 3) obtained results and data synthesis and 4) main study conclusions, recommendations and we aim to motivate the reader to further research.

Participatory Rural Appraisal

Pratt & Loiz (1992) defined PRA as a tool that was reformed from RRA (Rapid Rural Appraisal) which emphasized ‘public participation’. The advantage of PRA compare to RRA is that the ‘shifting of project’ from researchers/ authorities to the communities themselves. As a result, the power of ‘determine’ and ‘implement’ the project also will be shifted from local authorities to the communities as well. It is believed that the more commitment of the local community to a project, the higher the chances for a project to achieve its target. (Ling, 2011)

According to Ling (2011), one of the specific characteristics of PRA is to be ‘together’ with the local community. Being together can be in the form of overnight in the village, live in the village for a certain period of time, work with the villagers, doing their household chaos, farming, fishing together. Some authors associate this model with applied

anthropology and fieldwork because it is shared and owned by local people. (Chambers, 1994)

PRA incorporates the opinions and knowledge of the producers in the identification of needs and development of solutions, is multidisciplinary and interdisciplinary and allows to develop of a reflection through dialogue, action, and learning between people and the researcher; and in turn, seeks to promote the development and empowerment of communities. (Carrera Villacrés, Vernaza Quiñónez, Quiroz Ponce, Solís Charcopa, & Vicente da Silva, 2017)

According to Menconi, Grohmann, & Mancinelli (2017) participatory rural planning process (PRPP) “shall mean an inclusive path that aims to compare and integrate the expert knowledge with the local knowledge for the taking over of responsibility and shared commitments”.

Therefore, Baloch & Thapa (2018) proposed strategies with a bottom-up approach that have been designed through the use of participatory tools to support the generation of institutional policies by voice and opinion of farmers. Menconi et al. (2017) highlights the use of participatory strategies, which support the improvement of the empowerment level, empirical knowledge and existing relationships between actors and interest groups in the territory inside the PRPP.

Then, the bottom-up approach based on the study of Baloch & Thapa (2018) is analyzed to promote three intervention functions according to the context of the rural community. The first is the exploration of views and problems. The second is the Provision of Information in the community which has an important background in the investigation. The third function, including training, influencing the innovation of producers.

On the other hand, according to the PRA, Leeuwis, C. & van den Ban (2004) proposed different strategies, where we consider two collective strategies: support for organization and capacity development and transfer of policies and technological innovations. This is to persuade farmers or producers to shape their activity towards techniques, strategies or products based on technological innovation that can improve local production and therefore the standard of living of the inhabitants of the sector.

Social Innovation in Agricultural Producers

The learning communication model by Marcus (1986) was developed from diffusion and social learning theory. Based on this model adopters learn from observing other people who have innovative behavior. This model assumes that communication between the adopters and potential adopters is modeling the new behavior (Samiee & Rezaei-Moghaddam, 2017).

Innovation concept, on the other hand, it is considered as the result of a process of networking and interactive learning among a heterogeneous set of actors, such as farmers, input industries, processors, traders, researchers, extensionists, government official, and civil society organizations (Leeuwis, C., van den Ban, 2004). As a result, agricultural innovation purpose is seen as a co-evolutionary process, i.e. combined technological, social, economic and institutional change (Klerkx, van Mierlo, & Leeuwis, 2012).

According to Devaux et al. (2009), agricultural innovation system is currently an applied framework to analyze technological, economical and institutional change in agriculture. This implies seeing innovation systems as self-organizing growing networks of actors connected to the development of a certain novelty, emerging from a dominant incumbent production system (characterized by certain technologies, practices) or value chain configuration and moving towards an alternative to the incumbent system or even replacing it. (Klerkx, Aarts, & Leeuwis, 2010)

Case Study Territory

Santa Lucía is a small city located on north of Guayas province in Ecuador. It is surrounded by Daule river, part of low basin of Guayas River. Santa Lucia has approximately 22.608 productive hectares within its 359km² of surface (INEC, 2010). Almost 50% of those are bounded to transitory crops. (ESPAC, 2016)

Agriculture is the main activity in Santa Lucia. The most developed product in the territory is rice, they are several years producing these crops, then producers are somehow specialized (ESPAC, 2016). Through time, rice productivity has been increased by 16.25% until 2011, for the infrastructure investment in the area (PDyOT, 2016).

Figure 1: Geographical location of Santa Lucia, Guayas province



Source: Santos-Ordoñez, Párraga-Lema, Galarza-Villamar, & Torres-Naranjo (2016)

Paipayales is a small rural community of Santa Lucía, that grouped around 70 farmers. Most of the farmers only belong to the agricultural association as a cooperative mechanism. This association has received extensionist efforts mainly coming from academia to support the production activities that is the main problem of those peasants. The producers are starting the transition to Agroecology, with products as mangoes, soursop, jiron, rice and plantain; and also, they are elaborating mango marmalade for direct sale.

METHODOLOGY

This study is predominantly descriptive. It was used qualitative tools focusing on bottom-up strategies related to PRA based on Geilfus (2002), when it was selected the best participatory tools to work with the rural community selected.

Design

At first, it was developed a workshop in the Paipayales community using the Participatory Diagnosis tool proposed by (FAO, 2008) under the bottom-up approach (Baloch & Thapa, 2018). This workshop was carried with the producers' association called "Dios con nosotros" (God with us in English) and its members, legally formed by approximately 60 families, where men are the agriculture responsible but women play an important role in innovations. The producers are majorly from Paipayales, but there are some producers coming from the closest communities.

Work rounds was used formed by 6 to 8 producers, based on a convenience sample, it was asked to include the producers with higher level of incidence among the association. The work rounds were divided into three tables, according to three different aspects:

- **Productive:** Analyzing the innovation and technical factors.
- **Social:** Looking forward to equalities access and associativity.
- **Economic:** Studying commercialization and credits.

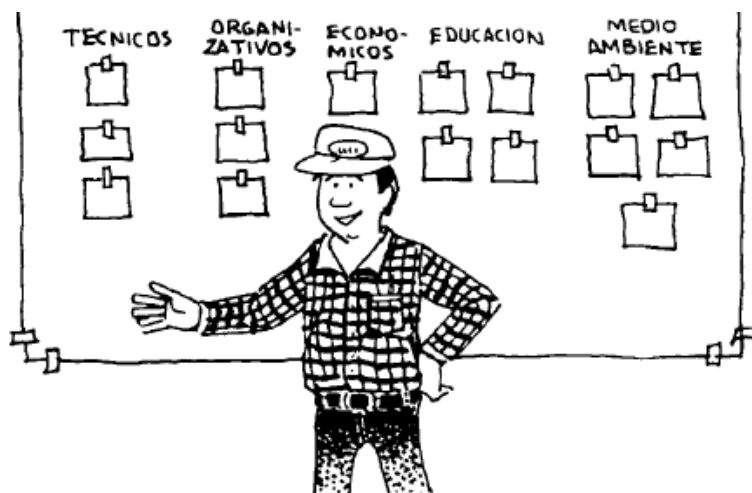
Initially, they decided which area they would like to discuss, in the first round. For that reason, in the beginning, some name tags were given, with the initial of the area of discussion (P: Productive, S: Social, E: Economic), and then located a number. Thus, in the second round, they changed positions to have a multidisciplinary discussion. In the third round, the people from the second round were kept.

Analysis

The workshop using PRA tools was developed into three phases:

1. Problems and needs identification

In each table, the participants discussed a thematic which is guided by the moderator. They needed to analyze the problems associated with their innovations and organization initiatives. Then a brainstorm is followed where participants located one post-it per idea.

Figure 2: Brainstorming to analyze solutions to problems

Source: 80 participatory tools by Geilfus (2002)

In the end, the moderator organized the ideas and prioritization is made, using votes. Then, they decided which are the critical or high-level problems they had according to each evaluated area. The main ideas are collected information that we then located in a synthesis on a table.

2. Identification of potential solutions

After prioritization of problems, we asked to discuss the two principal problems to find potential solutions. Then, a brainstorm was made, using post-its again. On the table, they located the post-its considering the main ideas of possible solutions to the problems.

After the brainstorm, a plenary is made to support the moderators grouped the ideas into groups, then prioritization is also made to get the two best potential solutions and analyzes in two new discussion groups.

3. Auto-diagnosis and solution analysis.

For the identification of potential solutions, the tool “Planning of Self-Diagnosis of Local Solutions” was used, which is one of the most interesting and important diagnostic exercises, identifying the solutions implemented locally to respond to problems.

In this phase, the participants resumed the previously formed groups and used the matrix of table 2 in which a representative wrote the two central problems identified. These were analyzed through questions (which are within the Self-Diagnosis Planning matrix). The questions to answer were: i) What are we searching for? (Objective of the exercise: what

kind of solutions do we seek to identify and analyze? Is there missing information?) ii) Where are we going to look for it? (In which part of the community, with whom, in which part of the production system, etc.), iii) How will we do it? (semi-structured dialogues, field observation, workshops with the community, etc.) iv) Who does it? (Responsibilities) and, v) What are we going to present? (Documents, budgets, projects, others)

In the end, in plenary, all the information obtained was presented by one member of each table. They explained what was discussed in each round, and what were the results. Then, the final activity was presented, which is the *Matrix of Necessities and Resources*.

Based on the activities identified in the Self-Diagnosis matrix of Local Solutions, participants by group could answer two basic questions: What do we need to carry out the activity? What resources are available in the community?

Likewise, they might determine which of the necessary resources are available locally, and which must be provided. The resources that could be substituted by others are put under discussion: for example, if there was no experience required in the community, training should be provided. The corresponding resources were placed in two columns: local resources and external resources.

RESULTS

Paipayales' producers mainly focused their innovation efforts on product transformation. They are processing marmalades in different flavors: mango, Jiron, quince, among others. Then, they are also processing organic rice, and some crops with agroecological manners. For the first discussion round, producers decided the table they want to discuss where the tables have a similar number of producers. The brainstorming started with the active participation of all the members.

The discussion tables were established as it was accorded. They gave their ideas about the topic proposed by generating vast information that we were able to synthesize in Table 1.

Table 1: Identified problems and needs

Dimensions	Component 1	Component 2
Productive	<p>Technical</p> <ul style="list-style-type: none"> • Lack of Storage Center. They depend on the peeler centers • Low productivity as a consequence of not having irrigation channels (SENAGUA). • Some native fruits are decreasing their production in the area. • Lack of Knowledge in the production of different crops. • Low availability and access to water, both for consumption and for agricultural production. 	<p>Innovation</p> <ul style="list-style-type: none"> • New crop production but few farmers working on it. • Agricultural product transformation: lack of position and labeling for mango jams. • Not all families want to participate in new processes. • Few farmers know how to work with organic products. • Some areas are not productive for all the crops.
	<p>Relationship and Associativity</p> <ul style="list-style-type: none"> • Not a good level of articulation with public institutions and companies. • Decision making is only represented by men producers. • Lack of product Commercialization channels where their main buyers are intermediaries. • Perception of different treatment and participation depending on the economic level. 	<p>Equality and Opportunities</p> <ul style="list-style-type: none"> • Poor knowledge about food safety for the production of jams. • Women are not legally part of the associations, but they play an important role in innovation. • Disorganization for new work teams (production and commercialization). • Lack of advisory and extension services for innovation.
Economic	<p>Commercialization</p> <ul style="list-style-type: none"> • Affected by price fluctuations of rice which is their main crop. 	<p>Assets and Credit</p> <ul style="list-style-type: none"> • Formal credit to small-scale producers is low.

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| • Not direct selling, the price cannot be negotiated. | • Existence of debts with non-formal credit lenders. |
| • Intermediates as peeler centers have market power, prices are usually unfair. | • Formal credit to agricultural producers is difficult, takes too much time and has high rates. |
| • Supply providers don't give any incentive to purchase or discount, sometimes they lend products under interest rates. | • Lack of saving culture and expenses control. Lack of local savings bank in the association. |
| • Pest increase increases production costs. | • Lack of capital to invest. |
| • Products are not well-positioned into the value chain. | • Short term to credit payment. |
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Source: The Authors

Table 1 presented the representative information given by the producers. They focused on major technical problems as lack of water for production and drinking, price fluctuations and access to credit. We collected a high number of ideas and categorized into groups (presented in table 1), then the producers can decide which are the most important to solve in short term for each of the analyzed areas.

Producers vote using stickers, and the main problems selected were: i) Productive: Storage and collecting center, and water supply, ii) Social: Technical advisory for new products and crop developing, and iii) Economic: Lack of capital for investment.

The second discussion round was carried where the producers where moved according to a number we gave them at the beginning. A heated discussion was carried among them. At first, it was difficult for them to generate ideas of potential solutions, but the moderator guided them to promote good ideas. The brainstorming equally generated several ideas synthesize in Table 2.

Table 2: Potential identified solutions

Dimensions	Component 1	Component 2
Productive	Technical <ul style="list-style-type: none"> • Create a collection center, where producers can store their products. • Transact with public institutions the development of deep wells for irrigation. • Generate studies for irrigation center with public companies. • Generate advisory on technical activities, knowhow, and food safety. 	Innovation <ul style="list-style-type: none"> • Major training and advisory on the development of new crops. • Agricultural product transformation. Creation of new products apart from jams. • Generate capacities to work with organic and agroecological new products. • Get major extensionist efforts: technical advisory, training, and development of new products.
	Relationship and Associativity <ul style="list-style-type: none"> • Seek major articulation with public institutions. • Major organization with a production process. • Major participation in Fairs and potentiate of Paypay mark. 	Equality and Opportunities <ul style="list-style-type: none"> • Generate major capacities to sow new organic or agroecological products. • Motivate women's participation in innovation as productive areas. • Get more advisory and extension services for innovation.
Economic	Commercialization <ul style="list-style-type: none"> • Take advantage of commercialization channels created by ESPOL (Spanish initials of Escuela Superior Politécnica del Litoral). • Create new commercialization channels to direct sells and better negotiation. • Get contracts with industries, distributors and big companies. • Add value to products they currently had, as product transformation, to find new markets. • Take better advantage of natural resources. 	Assets and Credit <ul style="list-style-type: none"> • Get internal and external paths for credits. • Strengthen the associativity level to get support and microcredits in a formal way. • Look for methods to get more capital for the communal bank they had. • More training to generate a better saving culture.

Source: The Authors

The ideas presented by the producers were more focused on producers' organizations and find new markets. They currently distribute their products using the channels given by ESPOL as fairs, shops, and final consumers. They recognized despite they are well organized; they need to pay more attention to equal participation.

In the association, they are not women as legally members of it, and also, they expressed some concern in equal participation for decision making or innovations projects. They expressed they require more training and extensions efforts to generate better results in their innovation process.

They also need to improve their communal bank, to create more credit opportunities for producers as much as associations itself. Then, they prioritized their ideas using the groups generated by the moderators. Thus, the most important solutions they defined are:

- 1) create a collection center for product storage and,
- 2) develop new crops to sow and more capabilities to product transformation.

In the third discussion table, they were regrouped then different producers are sharing new comments on those matters. Two tables were created where they talked about each of those potential solutions presented in Table 3.

Table 3: Planning of Self-Diagnosis of Local Solutions

Solutions	Collection center	New products to sow
What are we looking for?	<ul style="list-style-type: none"> • Infrastructure to storage our products, after the harvest. 	<ul style="list-style-type: none"> • Technical advisory to develop new agricultural products.
	<ul style="list-style-type: none"> • Better profits and selling prices. • Storage for rice and new products (agricultural and transformed products) 	<ul style="list-style-type: none"> • Reach new markets. • Create an identity for Paypay products.
Where are we going to look for it?	<ul style="list-style-type: none"> • In social projects with NGOs or public institutions. 	<ul style="list-style-type: none"> • Institutions as universities (ESPOL), Municipalities, among others.
	<ul style="list-style-type: none"> • GIZ or International Cooperation. • External financing. 	<ul style="list-style-type: none"> • Local crops (i.e. family groves, farms)

How do we do it?	• Having a better organization.	• Obtaining seeds, for producing organic or agroecological crops.
	• Presenting project ideas.	• Having diversified production.
	• Creating commissions to visit GADs or public entities.	• Visiting fairs and new markets.
Who is responsible?	• Creating commissions to visit GADs or public entities.	• Presenting and promoting our products in different media. (i.e. social network, fairs)
	• The association and its members	• The association and its members
	• Leaders and created commissions.	• Leaders and created commissions.
What are we presenting on?	• Elected representatives with ESPOL support.	• Elected representatives with ESPOL support.
	• Workplan, study, and project.	• Workplan, study, and project.
	• Letter to institutions.	• Letter to institutions.
	• Communal land ownership to motivate creation.	• Good campaigns on social media for promoting the products.

Source: The Authors

The PRA tools defined for defining problems and need, then solutions and an action plan worked according to it was settled at the beginning. Producers generated important ideas they could put in practice for their future projects. Into the action plan, they generated an auto diagnosis of those solutions presented.

They defined main roles and responsibilities, they got clear information about the objectives of those solutions, and which institutions they could go to present some concerns or potential projects and work plans. After this table, producers are more concern about the path to accomplish those goals. As much as the collection center and the creation of new products, they were clear about the activities they need to do to reach those objectives.

Finally, in plenary the agricultural producers generated information for creating Table 4, regarding resources they have inside their communities and the need for external resources.

Table 4: Matrix of Necessities and Resources

<i>Resources</i>	<i>Resources Needed</i>	<i>Does it exist</i>	
		<i>in</i>	<i>the External Resources community?</i>
<i>Human</i>	• Agricultural producers	😊	• Technical advisory
	• Family groups	😊	• Advisors and Trainers
	• Associations	😊	
<i>Natural</i>	• Land, crops	😊	• Water supply projects
	• Water	😞	• Conservation projects
	• Seeds	😊	
<i>Knowledge</i>	• Developing techniques	😞	• Technicians, researchers, and professional advisory
	• Marketing and commercialization	😞	• Academy, public and private institutions.
	• Tool management and processes	😞	
<i>Financial</i>	• Investment projects	😞	• Money
	• Economic resources	😞	• Economic intervention.
	• Access to credits	😞	• Public and private institutions support
<i>Materials</i>	• Physical space for collecting center	😞	• Technical studies
	• Agricultural equipment and tools	😞	• Investment projects

Source: The Authors

In table 4, we used emojis for grade the availability of the resources needed to implement the potential solutions they generate. Then, they analyzed resources into four main groups: human, natural, knowledge, financials and materials. For those, they had we draw a happy face emoji, and if they don't have access to that resource, then a sad face emoji was used. They considered they have most human and natural resources. However, knowledge (as technique, marketing or different tools), financial (as money for investment) and materials (as equipment and infrastructure) were needed from external sources.

The entire workshop fulfilled its objectives, that is created awareness to support producers in the innovation process. At the end of the workshop, they were really motivated and happy for all the information they didn't know they can generate by themselves. It was important to make an environment of support and equal opportunities where they could talk freely about what they considered as good or wrong. Finally, their ideas were really great for reaching the objectives they had, even when they don't know they already had defined objectives, PRA tools supported them in the involvement and generation of written information that could guide them for short- and long-term goals.

DISCUSSION

According to Santos-Ordoñez et al. (2016), social action is an extension criterion that allows us to evaluate the characteristics obtained for linking the academy with the needs of a community, through the transfer of knowledge to contribute to the integral development of the community members.

The innovation process in hands of the producers has a rooted culture to ESPOL technicians, thus, they depend on ESPOL decisions to make a move into a new process, crop or innovation decision they are considering making. According to Barrantes & Yagüe (2015), this characteristic shows that “the input of the innovation process was still in the hands of technicians and that more time is required, as indicated by the promoters, to learn more and have more experience for producers”. Collective action and the development of agricultural innovation system required joint activities developed by a non-governmental

organization (NGO) and then increasingly entrusted to local farmers (Hellin, 2012), then they could be empowered to carry the innovation process by themselves.

The PRA tools and the bottom-up strategies used to develop this article have been widely support the innovation process in the territory. According to Santos Ordoñez, Párraga Lema, Torres Naranjo, Galarza Villamar, & Calderón Vega (2017), both approaches have contributed to social development highlighting the participation of the actors and beneficiary communities, from the identification from the needs to the problem statement, to the development of potential solutions, action plans, and resource availability.

Finally, this agricultural extension for the innovation process can be categorized into Rendón-Medel, Díaz-José, Hernández-Hernández, & Camacho-Villa (2018) typologies. For this study it was defined into the second group which indicates in the group “there is a moderating approach where the change agent influence on the relationships of those involved but only as a facilitator between the parties” (Rendón-Medel et al., 2018). We highly consider our strategy reached out to the objective and answer our research question, PRA strategies support social innovation process in producers with knowledge transfer, better support on the decision making and they now have more specific information that they need to complement their innovation process in short- and long-term.

CONCLUSIONS

Our study's main achievement is specified in the decision-making process inside the agricultural association. We consider they are now surer of what are they looking for as the next steps in the innovation process and those graphic tools focus their efforts in a correct manner.

Producers have better tools to develop a wide use of strategies to continue working by themselves, they are clearer about institutions they must present their projects and places where to find financing for the innovation process. They are confident about their

innovation mark called “Paypay” and the mechanism to promote better and reaching new markets with their current and new potential products.

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